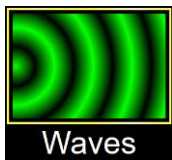


Access: Click on the PhET link from the class homepage or Google “PhET simulations”. Under physics, click on **Sound & Waves**. Launch the **Wave Interference** Simulation.



Click Waves Tab

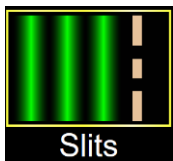
- 1) Click on the green button to start the water drips. Switch between the side view & top view.
 - a) What does the crest (peak) of the wave look like in both views?
 - b) What does the trough look like in both views?

2) Return to the **top view**.

- a) Adjust the frequency and amplitude. What happens to the waves when these are changed?
- b) Change the setting to **side view**. Adjust frequency and amplitude. How does adjusting frequency change the simulation? How does adjusting amplitude change the simulation?
- c) From the side view setting, click on the **measuring tape**. You will be finding the wavelength that corresponds to the data table below. It works best if you pause the simulation after the adjustments to frequency and amplitude have been made. Allow the pattern to form for a few seconds before pausing. Drag the measuring tape to get a value.

Frequency	Amplitude	Wavelength
Right (max)	Right (max)	
Right (max)	Middle	
Right (max)	Left (<i>not all the way</i>)	
Middle	Right (max)	
Middle	Middle	
Left (<i>not all the way</i>)	Right (max)	
Left (<i>not all the way</i>)	Left (<i>not all the way</i>)	

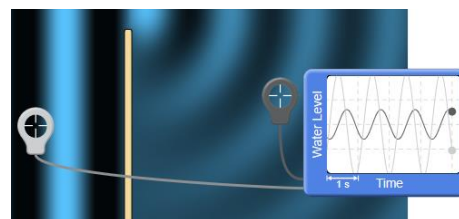
- d) Does changing the frequency affect the wavelength? Does changing the amplitude affect the wavelength?

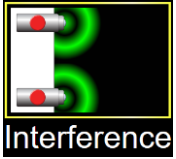


Click Slits Tab

- 3) Adjust the **frequency to max & amplitude to middle**. Choose **one slit with 1.0 cm slit width**. Click on the green button to start the wave generator.
 - a) What wave behavior is demonstrated as the wave passes through the slit? Provide a drawing of what you observe.

- b) What happens to the energy of the wave? Use the water level tool to compare before the slit & after the slit.

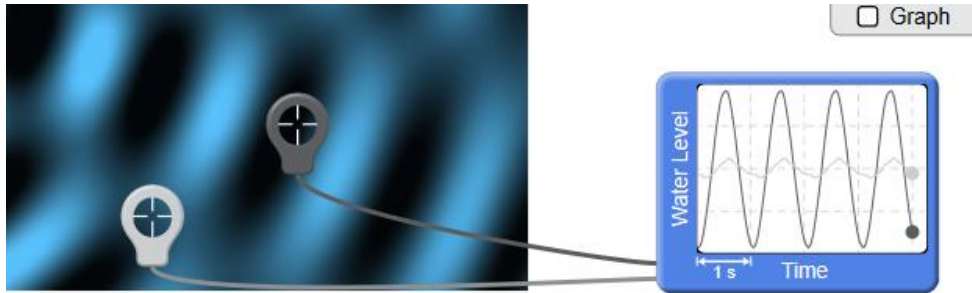




Click Interference Tab

- 4) Adjust the **frequency to max & amplitude to max**. Adjust the **separation to 4.0 cm**. Click on the both green buttons to start the water drips.
- a) What wave behavior is demonstrated by the interaction of these 2 sources of drips?

- b) Use the water level tool to compare the fuzzy zone & the zone with distinct dark & light spaces.



- c) Draw the resulting wave pattern.
- * Identify areas of constructive interference by labeling your picture.
 - * Identify areas of destructive interference by labeling your picture.
- d) Click on the **Graph** option on the gray settings box. Using the **measuring tape & stopwatch**, determine the following:
- a. Wavelength
 - b. Frequency (a numeric value, not just "max")
 - c. Period
 - d. Wave speed